The eight papers presented by Mr. B. S. Madhava Rao, M.Sc., as a thesis form an impressive whole dealing with all aspects of Born's non-linear, electro-magnetic field theory. They show that their author is thoroughly familiar with his subject, that he has a versatile and imaginative mind, and the mathematical skill necessary for handling such problems successfully.

Not all the details though are above criticism. The author is too much inclined to apply heavy mathematical machinery in a formal may without a sound estimate of the errors involved. I exemplify by the first paper, which I have scrutinized most carefully. By applying its method of approximate computation to the single integral

$$\int_0^\infty \frac{dr}{(r+r_1)(r+1)}$$

involving a small positive constant r_1 with $1/(r+r_1)$ as the "zero" and with the expansion

$$1/r(r+1) = \frac{1-r+\cdots}{r}$$

as the "classical" approximation, and by cutting off the classical part at $r=2$ the result would be

$$(*) \qquad \sim \log(2/r_1) - 2$$

Comparison with the exact value of the integral $\frac{1}{1-r_1}\log 1/r_1$ shows that the order $\log 1/r_1$ comes out correctly, but that the 2 under the log. in $(*)$ and the summand in 2 are meaningless. The difference between the radiius $16a$ in Mr. Rao's first paper and $8a$ in his second paper, page 31, is therefore illusory. A reliable estimate of the error involved would have established a more clear-cut result, saving at the same time the time of the

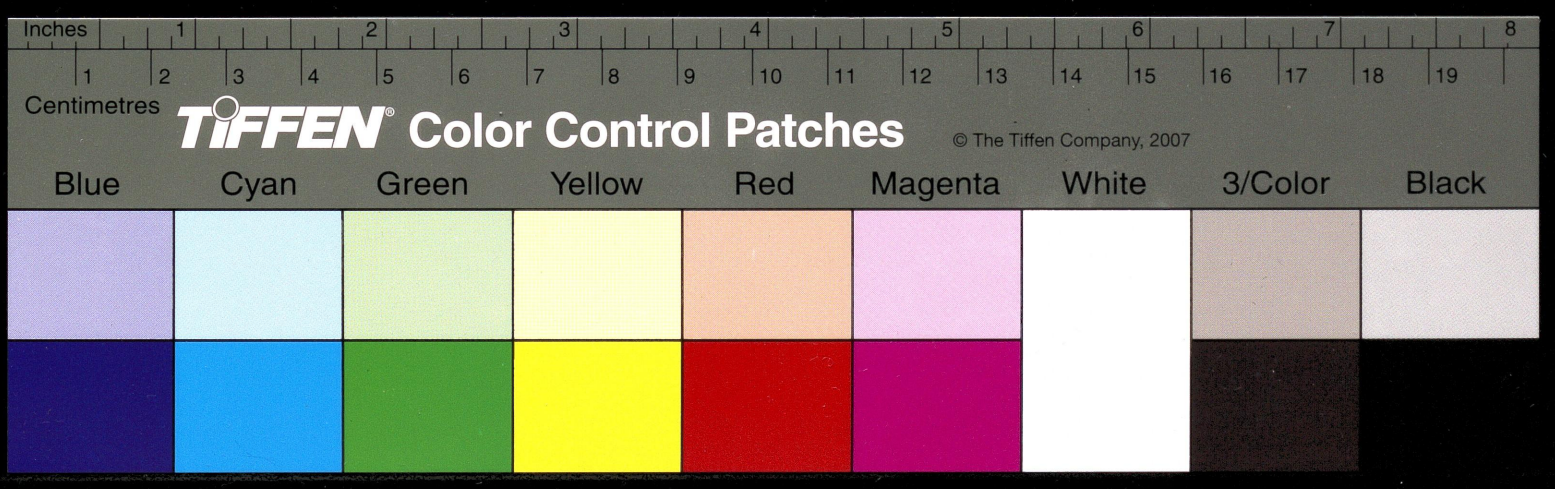
labor of lengthy "classical" calculations. But Mr. Rao's conclusion that the annular solution in Born's theory affords no hope of accounting for the spin of the elementary particles is certainly correct.

The statement of the theorem in Mr. Rao's fifth paper is untenable in the form in which he puts it.

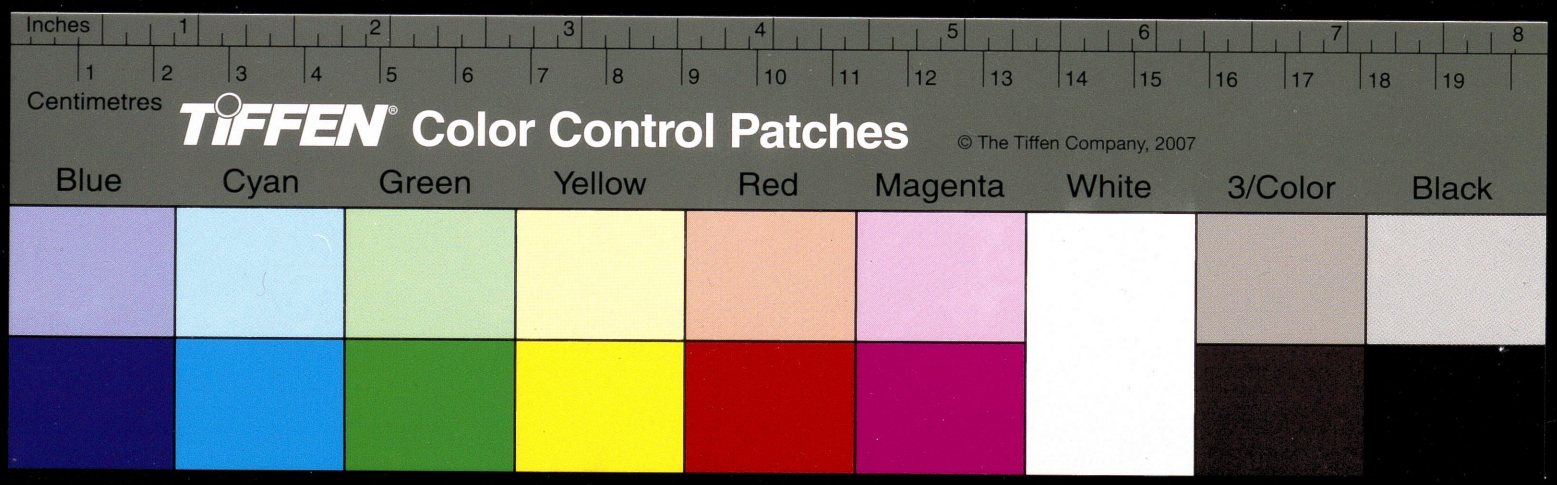
I cannot refrain from a general critical remark. Theories like that of Born are liable to become the playground of investigations which are neither full-blooded physics not full-blooded mathematics; they lack the sense of reality and of what is important in nature, indispensable to a true physicist; and they lack the accuracy and depth of a true mathematical investigation. Mr. Rao's endeavors are not exempt from this general objection.

It is, however, not through a fault of his that his results are to a large extent nagative. The prevailing impression which a study of his papers leaves is to the effect that no substantial progress in physics is to be expected from Born's field theory, in spite of its many attractive features. Mr. Rao's work is solid enough to impart convincing power to this impression, and that goes to his credit.

Notwithstanding my criticism, I repeat what I said at the beginning, - that Mr. Rao in his chosen subject has turned many stones which before had been left unturned. He has helped considerably in clarifying the situation. I therefore approve his thesis, and recommend the conferment upon Mr. Rao of the degree of Doctor of Science. I understand that having obtained a First Class at the examination for the ~~d~~g degree of Master of Science, Mr. Rao will not have to submit to any further written examination.



Anyway the diversity and high quality of his contributions to science and his long experience as a teacher at Mysore University should exempt him from any further tests.

Sd/- Hermann Weyl.

Princeton, N.J.,U.S.A.,January 26, 1938.